AHMAD OMAR AHSAN

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EDUCATION

Master of Science | **Biomedical Engineering (Specialization: Medical Imaging)** Jan. 2024 – Present
University of Calgary, Calgary, AB, Canada
- Supervisor: Dr. Matthias Wilms

Bachelor of Science | **Computer Science and Engineering** Jan. 2017 – March 2021
Islamic University of Technology, Gazipur, Bangladesh 3.65 / 4.0
- Relevant coursework: Linear Algebra, Data Structures, Numerical Methods, Machine Learning, Digital Signal Processing, and Pattern Recognition.

WORK EXPERIENCE

AI Engineer Feb 2021 – June 2022
Intelligent Machines Dhaka, Bangladesh
- Developed keyword transformer using TensorFlow for keyword classification. This model was developed to classify keywords spoken in different Bengali dialects to detect keywords spoken in sales pitches.
- Trained and deployed a text detection and recognition model using PyTorch for text classification and localization. This model was developed to extract information from handwritten receipts from local markets.

AI Intern Nov 2019 – Jan 2021
Intelligent Machines Dhaka, Bangladesh
- Fine-tuned Efficient-Det to detect point of sales material in the image. The model enabled the client to check how many point-of-sales materials were deployed in the market.
- Created scripts to optimize data generation, training, and testing for deep learning models.

RESEARCH EXPERIENCE

Research fellow Jun 2022 - Feb 2023
Hyperbolic Deep Learning for Computer Vision | Fatima Fellowship
- Hyperbolic image classification using hyperbolic graphs, hyperbolic transformers, and hyperbolic MLP.
- Generative heat modeling for MRI generation from latent codes.

Research contributor Nov 2020 - June 2021
Sound Generation Group | Sound of AI
- Worked as a research contributor in one of the largest open-source research projects.
- Developed and trained a WaveNet-based encoder for sound generation.
- Carried out a literature review of different sound generation modules.

PUBLICATIONS

- Ahsan AO, Peng W. **Discrete VQ-IHDM: MRI Generation with Vector Quantized Inverse Heat Dissipation Model.** Under review at Transactions on Machine Learning Research (TMLR).
- Ahsan AO, Tang S, Peng W. **Efficient Hyperbolic Perceptron for Image Classification**. Electronics. 2023; 12(19):4027. [Paper] [Code]
- MM Morshed*, AO Ahsan*. **Attention-Free Keyword Spotting**. ICLR 22 PML4DC workshop. [Paper][Code]

ACHIEVEMENTS

Hear Challenge 2021, NeurIPS 2021 Oct 2021
HEAR evaluates audio representations using a benchmark suite across a variety of audio domains.
- 1st place: Speech Commands Full, Speech Commands 5H, Mridingham Tonic
- 3rd place: Mridingham Stroke, Beehive States

*Equal contribution